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An exhibition of fifteen constructions which are the elaboration of one idea: the spectrum or segments of the spectrum, and the possibilities of its reflection. Each material or combination of two or more materials -- whether it be glass tubes, segmented mirrors, transmission diffraction grating, reflection diffraction grating, glass, liquid, or mirrors -- exists as a plausible field for exploration.

*m*

APPROVAL SHEET

This thesis has been approved by the following  
Committee of the Faculty of the Graduate School at the  
University of North Carolina at Greensboro

AN EXHIBITION OF CONSTRUCTIONS  
"

by

Jane Horner Walker  
"

A Thesis Submitted to  
the Faculty of the Graduate School at  
The University of North Carolina at Greensboro  
in Partial Fulfillment  
of the Requirements for the Degree  
Master of Fine Arts

Greensboro  
April, 1968

Approved by

Walter Barker  
Thesis Adviser

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Robert W. Ksen

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April 30, 1968

Date of Examination



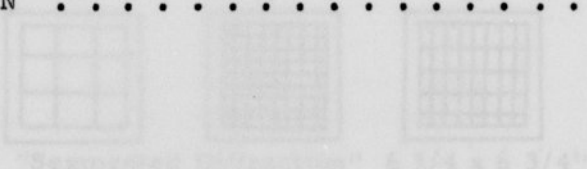
# CATALOGUE

Title	Dimensions
1. Cylinder with Complements pyrex tubes, color filters, mirrors, vinylite, wood	12" x 13"
2. Illusion Cylinder pyrex tubes, dye, mirrors, wood	9½" x 7½" x 6"
3. Transmit pyrex tubes, wood	7" x 7" x 5"
4. Transmission/Diffraction #1 transmission diffraction grating, reflection diffraction grating, wood, glass	6 3/4" x 6 3/4"
5. Transmission/Diffraction #2 transmission diffraction grating, reflection diffraction grating, wood, glass	6 3/4" x 6 3/4"
6. Reflection and Transparency mirrors, glass, wood	25" x 13" x 6"
7. Columnar Complements pyrex tubes, dye, mirrors, wood	42½" x 21" x 7"
8. Refraction of an Image solid pyrex tubes, ink drawing collage, wood	13" x 13" x 5"
9. Segmented Diffraction #1 transmission diffraction grating, segmented mirror, wood, glass	6 3/4" x 6 3/4"
10. Segmented Diffraction #2 transmission diffraction grating, segmented mirror, wood, glass	6 3/4" x 6 3/4"

Title	Dimensions
11. Segmented Diffraction #3 transmission diffraction grating, segmented mirror, wood, glass	6 3/4" x 6 3/4"
12. Cylindrical Spectrum tubes, liquitex, mirrors, wood	48" x 46" x 24"
13. Concavity and Reflection #1 concave and flat mirrors	7" x 7" x 7"
14. Concavity and Reflection #2 concave and flat mirrors, paint	7" x 7" x 7"
15. Windowed Transmission transmission diffraction grating, glass, wood	14 1/2" x 14 1/2"

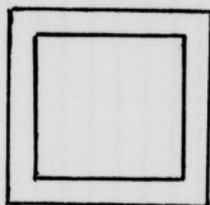
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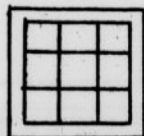
I. ILLUSTRATIONS

1

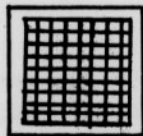


1. "Windowed Transmission"  $14 \frac{1}{2} \times 14 \frac{1}{2}$ "

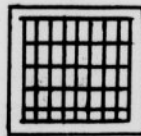
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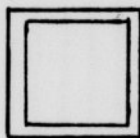
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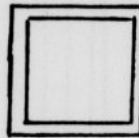
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"Segmented Diffraction"  $6 \frac{3}{4} \times 6 \frac{3}{4}$ "



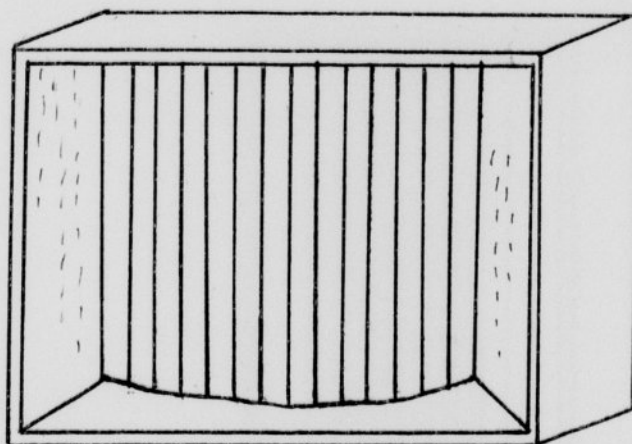
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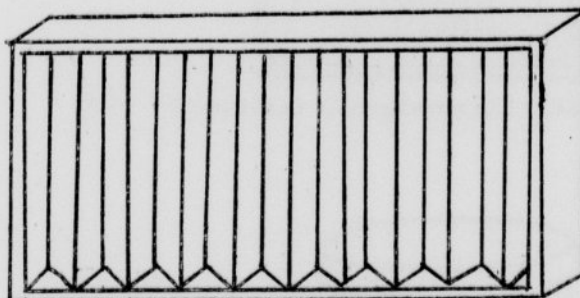
6.

"Transmission/Diffraction"  $6 \frac{3}{4} \times 6 \frac{3}{4}$ "

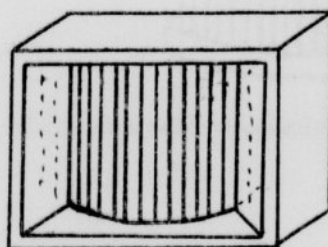




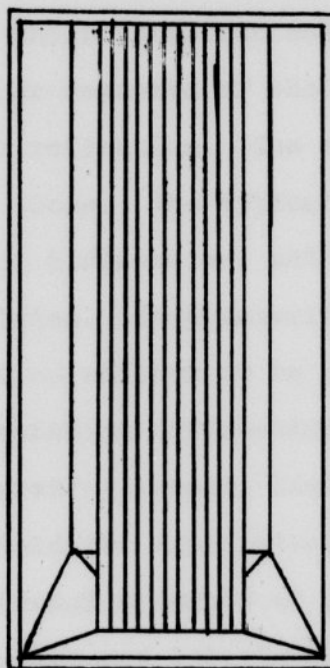
7. "Cylindrical Spectrum" 48 x 46 x 24"



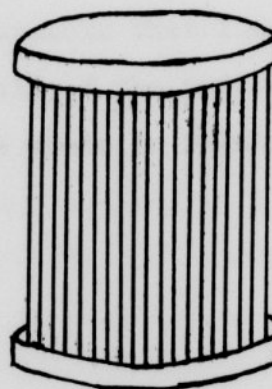
8. "Reflection and Transparency"  
25 x 13 x 6"



9. "Illusion Cylinder"  
9 1/2 x 7 1/2 x 6"



10. "Columnar Complements" 42 1/2 x 21 x 7"



11. "Cylinder with Complements" 12 x 13"

## II. INTRODUCTION

My present work is the elaboration and refinement of one idea: the spectrum or segments of the spectrum, and the possibilities of its reflection. The exploration of one idea generates more ideas. The optical phenomena of reflection, transmission, diffraction, and refraction present unlimited possibilities. Each material or combination of two or more materials -- whether it be glass tubes, segmented mirrors, transmission diffraction grating, reflection diffraction grating, glass, liquid, or mirrors -- exists as a plausible field for exploration. However, plodding step by step through a series of possibilities can be at times too apparent and laborious. It is almost like repeating an idea. Progression of a good idea has integrity; repetition of an idea does not.

There are four major aspects that I must consider in my work: color, the scale of the parts in relation to the whole, the scale of the whole in relation to the idea, and craftsmanship.

I am simple and direct with color because of the multiple components and because of my use of mirrors which expands the image of the components. I use economy of color. The complements orange and blue are used in four constructions (see figures #8 through #12) and two drawings. The intensity and vibrancy of the two hues are strengthened by their combination. Monochromatic

### III. COLOR

I have been conditioned to preformed associations with color. I limit myself to specific use of color because it is difficult to rid myself of this reflex. I use the spectrum produced by prismatic diffraction and the complements orange and blue.

Diffraction grating is a system of close equidistant and parallel lines ruled on a polished surface. The interference or diffraction of the light rays results in their breaking into an iridescent band of colors. The spectrum is a natural phenomenon. Its impression is that of pure color. Through the principal of diffraction, it occurs in soap bubbles, raindrops, gasoline floating on rain puddles and on feathers of birds. Such purity and freshness of color is a rarity in nature. It is commercially produced on thin sheets of plastic. This grating is the main element in six of my constructions (see figures #1 through #6). A painted illusion of the spectrum is used in one (see figure #7).

I am simple and direct with color because of the multiple components and because of my use of mirrors which expands the image of the components. I use economy of color. The complements orange and blue are used in four constructions (see figures #8 through #12) and two drawings. The intensity and vibrancy of the two hues are strengthened by their combination. Monochromatic



gradations provide the kind of contrast I want if a dark to light value scale of orange is adjacent to a light to dark value scale of blue.

I use black frames and backgrounds because against white, color is an element of darkness; against black color is an element of lightness.

My painting during the past two years has been influenced by my present work with color. For the first time I am able to use all the primary colors at a high intensity.

#### IV. SCALE OF THE PARTS IN RELATION TO THE WHOLE

My constructions are made up of many small equidistant segments. Each work is held together by a black wooden frame or supports. This being so, the scale of the parts in relation to the whole is important. The thickness of the frames must be included as part of the piece. The frames must be unobtrusive because color and reflection are the vital aspects. The individual and collective size of the components -- segmented mirrors, pyrex tubes, or glass slats -- is important. The height and width of the parts is relevant to the idea.

The amount and kind of reflection is important. Before I begin to implement any idea, I must realize what the mirrors will do. How will the image expand? To what depth will the image be taken? Will the mirrors continue the arc or create an angle? If they are parallel, what kind of image will be pushed into a funnel of progressively smaller forms?

It should be five feet tall instead of a foot tall. Its reflection possibilities include anything in line with the mirrors.

"Solomon's Complement" (Figure #10, 42" x 21" x 7") produces an illusion of space. The angle and reflection of the two mirrors gives the impression that it is possible to walk around the illusory square column.

# V. SCALE OF THE WHOLE IN RELATION TO THE IDEA

My constructions vary in scale.

Figures #2 through #6 ( $6\frac{3}{4}" \times 6\frac{3}{4}"$ ) are made of segmented mirrors, transmission diffraction grating, and reflection diffraction grating. They are effective only if they can be moved around. The viewer holds it in his hands so that he can tilt it at different angles, move to different surrounding colors, and hold it under varying kinds of light -- spot, flood, strobe, and sunlight. In other words, there must be this kind of personal viewer involvement or the work is meaningless. "Concavity and Reflection," figures #13 and #14, must be handled in the same way so that the viewer can be aware of their full effect. Both sets of constructions are personal things for myself and the viewer. They are not meant for a gallery; they are best in a library situation.

Due to the expensive nature of my materials, "Reflection and Transparency," figure #12, is a model. It should be five feet tall instead of a foot tall. Its reflection possibilities include anything in line with its mirrors.

"Columnar Complements" (figure #10,  $42\frac{1}{2}" \times 21" \times 7"$ ) produces an illusion of space. The angle and reflection of the two mirrors gives the impression that it is possible to walk around the illusory square column.

## VI. CRAFTMANSHIP

Working with rectangular boxes that frame symmetrical, vertical components demands exact planning. This is not so with many approaches to drawing, painting, and sculpture. In those media, there is the element of the unpredictable, of the accident. The nature of my work leaves no room for fortunate accidents, which remove possibilities instead of presenting new ones. The syntax demands that I have the entire work preconceived and put into scale drawing before I begin the actual process of completion. There can be no gap in concept and final result. All refinement, correction, elimination, and adjustment must be done on paper. Craftmanship is vital to the execution and presentation of the piece.



## VII. CONCLUSION

The symmetry of form and directness of color allow the viewer to take in only the abstract -- the form, the color, and their expansion. One does not form a mental picture of anything corporeal. The faceted reflection of the objects near the mirrors, the appearance of the spectrum, and the continuation of the components of the image transcend normal human experience.